

The science and philosophy of memory in the 21st century. Part II. Antecedents: scientific and philosophical controversies in the early 20th century

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ABSTRACT

Between the classical era and the 21st century, the beginning and the end of the path we plotted in the first article of this series, we shall now focus our attention on our most significant immediate precursors. Approximately a hundred years ago, in the first decades of the 20th century, several controversial debates took place between the scientists and philosophers of the day that continue to resonate in some arguments today. The controversies about biologism (*Biologismus-Streit*) and psychologism (*Psychologismus-Streit*) are characteristic of the relationship between the emerging experimental sciences (biology and psychology) and the philosophical traditions inherited from the 19th century (neo-Kantianism, neo-Hegelianism, positivism, various forms of materialism, pragmatism) and newer philosophical movements, such as phenomenology. In the field of biology, the question of vitalism (*Vitalismus-Streit*) became a focal point for the scientific/philosophical debates of the day. *Lebensphilosophie* (philosophy of life), a heterogeneous philosophical movement characteristic of these decades, took a central role in these debates. This article presents an overview of the thought and works of Max Scheler, Wilhelm Dilthey, and Henri Bergson, key figures in the *Lebensphilosophie* movement, in the context of the neuroscientific understanding of the day. The question of memory is an important element in the thought of all three. We analyse in greater detail the debate between Dilthey and Ebbinghaus, paradigmatic of the scientific-philosophical controversy that involved both the object and the methodology of study in the ambit of natural (*Naturwissenschaften*) and human sciences (*Geisteswissenschaften*).

KEYWORDS

Bergson, Dilthey, *Lebensphilosophie*, memory, Scheler, vitalism

Introduction: a few methodological and historical notes

Before continuing with the task we set ourselves in the first article in this series, we should recall and, to the extent possible, discuss some of the methodological issues addressed in that article.¹ The first of these is related to the fundamental attitude (“mood” in the terminology of Heidegger) that gives rise to the intention to write on this subject, ie the science *and* the philosophy of memory, as they are practised today. The emphasis on the

conjunction *and* calls attention to the two senses of the word: 1) separation, semantic differentiation (what does it mean to do science and to do philosophy at the historical time in question?), and 2) spatial and temporal proximity (how may we address both forms of knowledge *at the same time* in the early 21st century?). Once more, we stress this emphatic expression, *at the same time*, to draw attention to the singularity (as well as the difficulty) of this approach. What do we mean here by *at the same time*? Let us return once more to Aristotle, whose *Cate-*

gories analyses, for the first time, the primary elements of our speech and thought. In the *postpraedicamenta*, the final part of the work, which has received little critical attention and which some scholars consider to be spurious, Aristotle addresses the notion of *háma*, simultaneity, which applies to those things “that have come into being together. For neither in that case is prior, nor is either posterior to the other” (*Cat* 13 28-30).² Here, Aristotle considers not only simultaneity in time (synchrony), but also logical and modal coexistence (“This for the most part is true, for instance, of double and half”; *Cat* 13 30). In this sense, which is also an ontological distinction, as explained by Teresa Oñate, we aim here to address the science and the philosophy of memory *at the same time*.³ In the scientific and clinical context, we may also note something of this approach when we consider or analyse *cross-sectional* studies.

Nonetheless, this dual, simultaneous approach must not obscure the radical differences between the tasks of science and of philosophy. In one of Heidegger’s lectures on Nietzsche (1937), before commenting on the theory of the eternal return, he explains (not without a certain irony) the prudence and the slow tempo with which the latter developed and communicated his thought in the final lucid years of his life:

In the course of the nineteenth century [the learned sciences] began to operate like industries. The point was to get the product that had been manufactured out onto the market as quickly as possible, so that it could be of use to others, but also so that the others could not pinch our discoveries or duplicate our own work. This has especially become the case in the natural sciences, where large-scale, expensive series of experiments have to be conducted.^{4(p15-6)}

In contrast to “science,” the state of affairs in philosophy is altogether different. [...] The haste to “get it out” and the anxiety about “being too late” do not apply here, if only because it belongs to the essence of every genuine philosophy that its contemporaries invariably misunderstand it.^{4(p17)}

Several decades later, in *The end of philosophy and the task of thinking* (1962),⁵ Heidegger proposes a more complex (and more interesting) relationship between philosophical thought and Western scientific/technological activity. The predicted dissolution of philosophy into different scientific and technological disciplines, Heidegger suggests, may give rise to the rebirth of a pre- and postphilosophical thought^{6(p62)}: “a thinking outside of

the distinction of rational and irrational still more sober than scientific technology.”^{5(p72)} Forthcoming articles in this series will review some of these rather enigmatic formulations of the German philosopher.

The differentiation between the analytic and continental philosophical traditions in the 20th and 21st centuries, mentioned in the first article, also merits further comment. It should be noted that the delimitation of territories, of borders, that arises from this distinction evolved from the 1930s, reaching its height in the 1980s, though numerous authors from one or the other tradition have contributed to a more “transversal” integration or to a more pluralist view (eg, J. Habermas and K.O. Apel on the “side” of continental philosophy, and R. Rorty and H. Putman in the analytic tradition).^{6(p94)} Another relevant example is that of George (Jorge) Santayana (1863-1952), a philosopher whose thought, as we shall later see, is also pertinent in our inquiry. Though he was born in Madrid, Santayana belongs to the North American philosophical tradition and therefore to the analytic school; however, the singularity of his materialist and naturalist thought has also been linked to certain aspects of continental philosophy.⁷

Finally, we should make a comment on the temporal, historical perspective of this study. Between the classical era and the 21st century, the beginning and the end of the path we plotted in the first article of this series, we must now focus our attention on our most significant immediate predecessors. Approximately a hundred years ago, in the first decades of the 20th century, in addition to the formation of the main philosophical traditions of today, several controversial debates took place between the scientists and philosophers of the day that continue to resonate in some recent dialogues. Thus, let us now turn our attention to that historical period, the first third of the 20th century.

Development

A hundred years ago: Lebensphilosophie

The 19th century was the century of the great philosophical systems, but above all it was the “century of science.” In a lecture published in *Science* (29 December 1899), the American geologist William North Rice⁸ summarised the theoretical achievements of the science of that century: the extension of the universe in space and in time, and the unity of the universe. Charles Darwin, the “Newton” of biology whom Kant had dismissed half a

century earlier in his *Critique of judgement*,^{9(p244-5)} had created a framework to explain living things, including humans, which remains applicable today. Modern physics and chemistry had reached their maturity; by the end of the century, anthropology (both physical and cultural), sociology, and psychology were well established as academic disciplines.^{10(p795)} These developments had an immense impact on philosophy, as described by John Dewey, one of the fathers of North American pragmatism, in a lecture on Darwinism in 1909:

No one can fairly deny that at present there are two effects of the Darwinian mode of thinking. On the one hand, there are making many sincere and vital efforts to revise our traditional philosophic conceptions in accordance with its demands. On the other hand, there is as definitely a recrudescence of absolutistic philosophies; an assertion of a type of philosophic knowing distinct from that of the sciences, one which opens to us another kind of reality from that to which the sciences give access [...].¹¹

As a result of the advances in life sciences, and particularly experimental biology and psychology, in the last decades of the 19th century, academic philosophy (predominantly neo-Kantian schools) found its place as the logical foundation of the sciences, establishing the conditions that enabled scientific inquiry. This entente between science and philosophy was broken in the early 20th century, and the philosophical traditions inherited from the 19th century (neo-Kantianism, neo-Hegelianism, positivism, various forms of materialism, pragmatism, spiritualism), and more recent currents (phenomenology) entered the debate.¹² The resulting controversies, understood as longitudinal processes with their own historical development, are labelled in German with the appellative *Streit* (argument, quarrel). We shall focus on the two controversies that had the greatest repercussions on the relationship between science and philosophy: *Biologismus-Streit* (and its scientific-technological equivalent, *Vitalismus-Streit*) and *Psychologismus-Streit*. While the philosophical positions held in this period were diverse and heterogeneous, as was the idea of philosophy itself, they generally share an opposition, in the field of life (and particularly human life), to the reductionist, mechanistic explanatory framework of contemporary science. For G. Bianco,¹² the rejection by many philosophers of the “mechanistic reductionism” of experimental biology during those decades contributed to the emergence of *Lebensphilosophie* (philosophy

of life), whereas opposition to the “reductionisms” inherent to psychology and sociology gave rise to philosophical anthropology (Figure 1).

The precursors of *Lebensphilosophie*, which constitutes a central theme in the work of different thinkers, rather than a well-defined philosophical current or school (*The theme of our time*, as Ortega y Gasset called it in the title of a 1923 essay), were German romanticism and post-romanticism (with Goethe as a central figure) and the *Naturphilosophie* of German idealism (Kant, Fichte, Schelling, and Hegel). Its “reign,” in the words of Schnädelbach,^{13(p173)} extended from 1880 to 1930; in other words, approximately spanning the period between the publication of Nietzsche’s *Thus spoke Zarathustra* and of the last works by Oswald Spengler and José Ortega y Gasset that fit within this tradition. K. Albert systematically addressed the meaning of *Lebensphilosophie* for different authors from the period in question.¹⁴ Of the authors addressed later in this article, Albert cited Dilthey and Bergson (alongside Nietzsche) among the movement’s founders, whereas Scheler was a key figure in the interpretation of its historical role.

In this article, once more following Albert, we shall adopt a restricted concept of *Lebensphilosophie*, limited to the period described, when the predominant thinkers were from Germany and France, though the Spaniard Ortega y Gasset was also relevant. Other authors, such as R.J. Kozljanic,¹⁵ observe traits of this movement from the late 18th century to today, and include such other authors as M. de Unamuno, among other Spanish thinkers, and W. James, a key figure in North American pragmatism.

Philosophies of life (specialists tend to use the plural to highlight the multiplicity of perspectives) share some key features. They were often disseminated outside the academic sphere, through essays, books, or newspaper articles, with texts reflecting on everyday life and the historical present. They show a clear anti-intellectualist attitude, and seek to recover the methodology of philosophy itself, rather than the rationale employed in natural science (*Naturwissenschaften*), and particularly experimental sciences. From an anti-reductionist position, they participated in the scientific debates of the time, for example in the *Vitalismus-Streit*, in which they confronted vitalist and mechanistic interpretations of experimental results, particularly in the fields of embryology and psychology. Finally, the methodological emphasis on intuition (Bergson) and the inner experience of life (Dilthey)

led some authors to explore deeper levels of the human experience, with approaches closer to mysticism or sapiential knowledge, like the thought of the pre-Socratics, the Upanishads, or Taoism.¹⁴

These decades saw a crossover and interweaving of the *Biologismus-Streit* and *Vitalismus-Streit* controversies, with the participation of philosophers, biologists, and physicians. Theoretical propositions were set forth that have endured over time; for instance, neo-vitalism (H. Driesch), holism, organicism, and emergentism, in defence of the “autonomy” of biology with respect to chemistry and physics and against mechanistic explanations of the development of living things or mental activity.¹⁶ As noted by A. Harrington, this was a complex scientific and philosophical movement that sought to “reenchant” the world in the face of the “disenchantment” induced, in Weber’s view, by the experimental sciences. A shadow has historically been cast over this system of thought due to its ideological exploitation by Nazi biologists, as the foundation for a biopolitics based on such concepts as race, eugenics, *Lebensraum*, and the state as a superorganism.¹⁷

Some key ideas related to the *Biologismus-Streit* debate are found in the work of Max Scheler (1874-1928), in his *Versuche einer Philosophie des Lebens: Nietzsche, Dilthey, Bergson* (Essays for a philosophy of life: Nietzsche, Dilthey, Bergson; 1913-1915), and especially in *The human place in the cosmos* (1928).¹⁸ Through a brief analysis of the latter text, which had a significant cultural impact in its day, including in Spain, we may discriminate its content pertaining to contemporary experimental and theoretical biology, and the author’s philosophical reflection on life and living things.

To describe the different types of activities that make up human nature, Scheler proposed a system of interrelated functional strata, a very common approach at the time in various scientific and cultural contexts. In some cases, these levels of the “psychophysical being” present a biological basis and a neuroanatomical substrate, consistent with the functional and anatomical stratification of the nervous system that was incorporated into the neuroscience of the time by J. Hughlings Jackson (1884), T. Meynert (1892), L. Edinger (1912), and C. von Monakow (1914).¹⁹ In the framework of a philosophical anthropology, Scheler aims to “touch upon only some points that concern the *essence of the human being* in his relation with plants and animals and concern, metaphysically, *his*

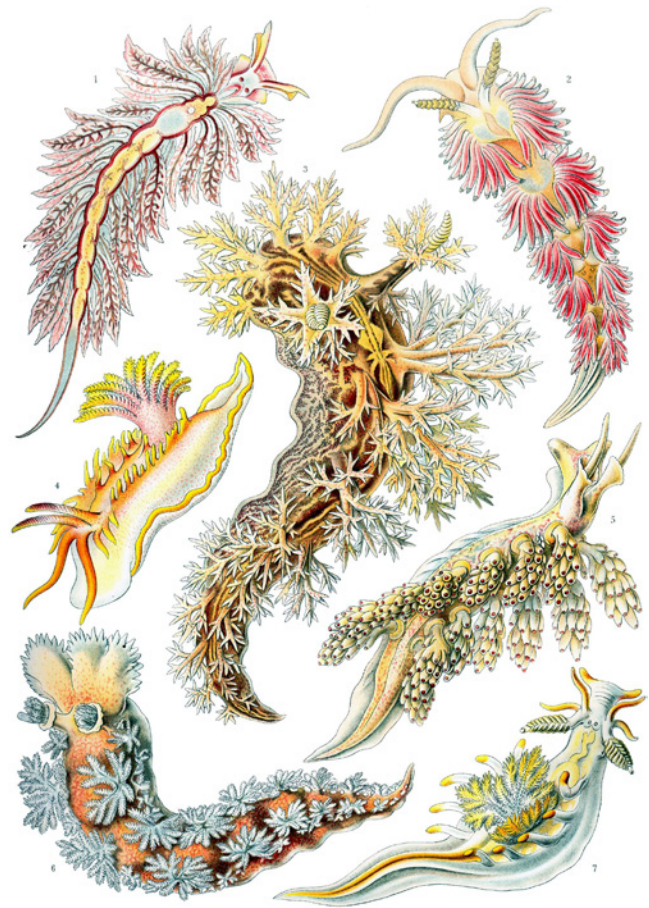


Figure 1. Plate 43 (*Nudibranchia*) of Ernst Haeckel’s (1834-1919) *Art forms in nature* (1904), portraying different species of sea slug. The *Biologismus-Streit* controversy is considered to have begun with the publication of Haeckel’s *The riddle of the universe* (*Die Welträthsel*) in 1899. This order of marine gastropods includes *Aplysia californica*, the species in which Eric Kandel (b. 1929) conducted his extensive research on the molecular and cellular basis of learning and memory. Source: Wikimedia Commons, the free media repository. Available from: <https://commons.wikimedia.org/w/index.php?curid=566784> [accessed 20 Oct 2022].

special place in the cosmos [emphasis in original].”^{18(p5-6)} These layers or “psychic forms,” if “psychic” is taken to be equivalent to “vital,” are:

- Affective impulse (*Gefühlsdrang*), which pertains to plants, but is also present in animals and in humans as a source of psychic energy. Its function is related to nutrition, growth, reproduction, and death. In humans, this type of activity is located within the nervous system, understood as the “power system”¹⁸

(power in the Nietzschean sense), in the brainstem. This naturally echoes the Aristotelian concept of the nutritive soul.

- Animal instinct, linked to sensitivity (representation) and behaviour. “Whatever an animal can represent and sense is a priori governed and determined by the relation its instincts have to their environment [*Umwelt*].”^{18(p14)} Note here the concept of *Umwelt*, which was introduced by J. von Uexküll (1864-1944) and was very widespread at the time, alongside the complementary concept of *Innenwelt* (inner world), the sphere of somatic homeostasis. For Scheler, animal behaviour involves a “core” at the convergence of afferent and efferent impulses (reflex arc).
- Associative memory (*mneme*), by which instinctual behaviour “is *slowly but steadily modified* [...], a process directed by its usefulness to life and in meaningful ways,” and “is strictly dependent on the *number of trials* or so-called trial movements [emphasis in original].”^{18(p16)} Scheler attributes the physiological basis of memory to the Pavlovian conditioned reflexes and, faithful to Aristotelian tradition, distinguishes between *mneme* and *anamnesis*, defined as “free ‘recollection’ of the past.”^{18(p20)}
- Practical intelligence, or “capacities for and the activity of selection,”^{18(p22)} which manifests suddenly, without previous trials, and is immediately translated into an action that is new or atypical to the species and the individual. To illustrate this point, Scheler refers to W. Köhler’s classical experiments with chimpanzees.^{18(p23)}

Humans share the types of psychophysical processes described until this point with other living things. However, “this new principle is *beyond* what we call ‘life’ in the widest meaning of the word. What makes the human being a ‘human’ is not a new level of life—and it is certainly not just the *only* form in which life manifests itself: the ‘psyche’ [emphasis in original].”^{18(p26)} The Greeks called this concept *logos* (reason); Scheler uses the term *spirit*, provided that the centre of acts is a *person*. The essential properties of the spirit are freedom (“from the bondage to, the pressure of, and the organic dependence on ‘life’”; “not tied anymore to its [...] environment”), matter-of-factness (“it is determinable by ‘what’ things themselves are”), and *self-awareness*, whereby the spiritual act is tied to a second dimension of the reflex arc.^{18(p26 et seq.)} Thus, for Scheler, no disconnect exists between the biological and the organic: “according to our

theory the spiritual acts [...] must also possess physiological *and* psychic parallels [emphasis in original].”^{18(p55)} The “basic mistake” committed by Descartes, as noted by A. Damasio,²⁰ lies in his radical ontological separation of these two spheres.^{18(p54)} This reflection on what is and is not common to animals and humans, as well as the thought of other authors in the *Lebensphilosophie* movement, may have interesting repercussions for the current debate on animalism, though these are beyond the scope of the present article.

Another important controversy at the time was the *Psychologismus-Streit* debate; in Germany, the key period for this debate spanned from the last decade of the 19th century to the outbreak of the First World War. The philosophical, anti-psychologistic side included, first, Gottlob Frege (1848-1925) and later Scheler’s master Edmund Husserl (1859-1938); the psychologists included Wilhelm Wundt (1832-1920), Theodor Lipps (1851-1914), and the neo-Kantian Benno Erdmann (1851-1921). It has been suggested that it was precisely Frege’s critique of the initial psychologistic positions espoused by Husserl in his 1891 book *Philosophy of arithmetic* that led the founder of phenomenology to antipsychologism in his *Logical investigations* (1900). Again, the positions and arguments in this debate are diverse, and the central question is whether logic and epistemology, as disciplines, pertain to psychology, rather than to philosophy. Or, to adopt the form of argument that characterised these debates, whether logical laws can or cannot be reduced to human psychological activity (which would define “anthropologism,” according to Husserl).²¹ In a sense, this debate runs parallel (or rather, antiparallel) to the *Biologismus-Streit* controversy: in this case, it centred around the defence of philosophy as a discipline independent from psychology, and ultimately from biology.

Basic and clinical neuroscience in the early decades of the 20th century

Briefly, how might we describe the horizon of objective knowledge and theoretical thought in which the basic and clinical neuroscientists of the day conducted their work? The time of the founders of clinical neurology, M.H. Romberg (1795-1873), G.B.A. Duchenne (1806-1875), J.M. Charcot (1825-1893), J. Hughlings Jackson (1835-1911), and W.H. Erb (1840-1921) (among others), had passed,²² and neurological practice, still closely linked to (and often dependent on) psychiatry, was looking for its own place. With respect to the understanding

of the structure and function of the nervous system and of behaviour, the fundamental works in the first decade of the 20th century were the histological studies of Cajal and colleagues, the experimental and theoretical work of I.P. Pavlov, and the development of modern experimental neurophysiology by C.S. Sherrington. Around the turn of the century, R. Virchow's cellular pathology began to be applied also to diseases of the nervous system; in the first decades of the 20th century, clinical and neuropathological descriptions of numerous new diseases were published. Finally, we must also consider the fundamental contribution of L. Pasteur's germ theory and the influence of the hygiene movement on clinical neurology at the time. The 1920s were especially significant in the development of new diagnostic techniques: myelography, angiography, electroencephalography, and electromyography. The first angiography of the human carotid artery (Egas Moniz) was published in 1927, the same year that Heidegger published his *Being and time* and Bergson won the Nobel Prize in Literature. Particularly important discoveries on the chemistry of the nervous system are the activity of epinephrine, in 1904-1905, and of acetylcholine, in 1929. It was not until the 1930s that effective pharmacological treatments were developed, including physostigmine (Mary Walker, 1934) and phenytoin (Merritt and Putnam, 1938).²³

In the area of psychology, the late 19th and early 20th centuries have been referred to as the "era of disagreement" in the development of German psychology, a period characterised by the appearance of the first psychology institutes, laboratories, and seminars, and the professionalisation of psychology as an applied discipline, outside of the university context. This was the period in which the great psychological schools were formed: Gestalt psychology, field theory, personality theories, characterologies, typologies, etc, and developmental psychology. It was also marked by the differentiation between empirical psychology and other "alternative" lines of development, including depth psychology (psychoanalysis) and holistic (Gestalt) psychologies.²⁴

Two of the founders of *Lebensphilosophie*, Dilthey and Bergson, were involved in a particularly polemical debate with the experimental science of the day. We shall briefly review some aspects of their thought, as well as their views of memory.

Wilhelm Dilthey

Wilhelm Dilthey (1833-1911) produced most of his work in the final third of the 19th century and the first decade of the 20th. He was a professor of philosophy and other disciplines that would today be considered to belong to psychology and sociology, at the universities of Basel, Kiel, Breslau (today, Wrocław), and Berlin. His work was vital in the development of hermeneutics (the theory and philosophy of interpretation), from its beginnings in Schleiermacher (1768-1834) (whose biography Dilthey wrote as his first major text) to Gadamer (1900-2002) and Ricoeur (1913-2005). As noted previously, he was also one of the main representatives of *Lebensphilosophie*, the philosophy of life (and, in the specific case of Dilthey, of historically conditioned life). Dilthey reproached Nietzsche for the ahistorical and amoral nature of his philosophy, his indifference to the historicity and sociability inherent to human beings. Regarding Kant, to whom he initially considered himself a successor (he began writing a "Critique of historical reason," which he never completed), he criticised the "rigid, dead" nature of the concept of a priori knowledge, which Dilthey, once more, saw as being conditioned by the living historical process. Finally, Dilthey argued against Hegel's philosophy of history (ie, the development of history in accordance with the laws of reason) with recourse to the historicity of human lived experience.^{14(p61-2)}

Dilthey was always attentive to developments in the experimental sciences, and his main reflections, which had a significant impact on his later philosophy, are related to the roles of experience and of the experiencer, as a historical subject, in the process of knowledge. Many authors have signalled the fundamental distinction that Dilthey established between the method of the natural sciences (*Naturwissenschaften*), seeking to explain or *understand* (*erklären*) objects and natural processes, and that of the sciences of the spirit (*Geisteswissenschaften*), today called the social or the human sciences, which sought to *comprehend* (*verstehen*) social/historical processes. The first type of knowledge (*Erkenntnis*) is based on external experience guided by theory, whereas the second is dependent on inner, lived experience (*Erlebnis*), which internally links the subject with the object of knowledge.²⁵ Some commentators note that this apparent methodological (even ontological) dualism, which received particular attention from analytic philosophers, in fact distinguishes between two types of experience:

external experience, which creates an image of reality (the “external world”), subject to the laws of natural science; and inner experience, which incorporates the values and purposes of life (inner world). Two types of experience drawn from a single reality. However, over his career, Dilthey proposed a complex relationship between these forms of experience. This conception continues to be relevant today in the dialogue between the humanities, social sciences, and natural sciences. While the previous, now classic, dichotomy appeared in *Introduction to the human sciences* (1883), in his most controversial work, *Ideas concerning a descriptive and analytic psychology* (1894), the two types of experience are more closely related, and linked to the living human body via the nervous system.²⁶

The psychophysical life-unit which is filled with the immediate feeling of its undivided existence is analyzed into a system of empirically observable relations between facts of consciousness and observable relations of structure and the function of the nervous system; [...] and a change in our body, in turn, is accompanied by a change in our psychic state only through its effect on the nervous system.

In response to the complexity of experience in humans qua “psychophysical life-units,” Dilthey draws a distinction within the natural sciences, between the “physico-chemical sciences,” which correspond to “inorganic nature” and are based on the mathematical understanding of quantitative relations, and biological sciences, which are connected by a teleology of life (*Lebenszweckmäßigkeit*).²⁶ Thus, the latter group of disciplines, and particularly the neurosciences, as they would be called today, are best able to approach the experience of humans as living things.

The brief debate between Wilhelm Dilthey and Hermann Ebbinghaus (1850-1909) became a paradigm for the controversies that set some philosophers against the proponents of the emerging experimental sciences during the late 19th and early 20th centuries. Ebbinghaus was one of the founders of experimental psychology, and the first to apply the experimental method to the study of higher psychological functions. He wrote the first scientific text on the psychology of memory, and designed and performed on himself a series of experiments on memory and learning, which remain valid today.²⁷

In 1894, Dilthey published *Ideas concerning a descriptive and analytic psychology*, the text of a lecture he had

given at the Prussian Academy of Sciences. Arguing against neo-Kantian philosophers such as Wilhelm Windelband (1848-1915), who proposed a radical dissociation of natural and human sciences, Dilthey proposed that a “descriptive psychology” should be the generative foundation of *Geisteswissenschaften*. He also engaged in a polemic against the “explanative” (experimental) psychology of the day, founded by Wundt, and *Völkerpsychologie* (folk psychology), which was also developed partly by Wundt and later represented by Georg Simmel (1858-1918), one of the founders of sociology. In 1896, Ebbinghaus published a response containing sharp criticism, which Dilthey had not expected; in defence of associationist psychology, the former sought to refute his colleague’s main theses.²⁸ Dilthey wrote no reply to Ebbinghaus, and did not return to the subject of this debate in his writings. F. D’Alberto²⁹ groups Ebbinghaus’ arguments against Dilthey into three sections:

1. The definition and methodology of explanative psychology. Ebbinghaus criticises Dilthey’s inclusion, under the term “explanative psychology,” of highly diverse forms of psychology, which followed different methodologies, and for oversimplifying the experimental method. For Dilthey, experimental data are mediated by the hypotheses that lead to their obtention (“Hypotheses, everywhere only hypotheses!”); thus, the mechanistic (physical/chemical) explanation would ultimately be reduced merely to a series of hypotheses. Dilthey sets these (indirect, partial) experimental data in opposition against the immediate, full facticity of inner, lived experience, *Erlebnis*.
2. The life-nexus (against reductionism). Ebbinghaus rejects in its totality the heuristic framework proposed by Dilthey. In opposition to the causal *explanation* provided by the natural sciences, based on hypotheses, Dilthey proposes *comprehension* of the overall life of the individual through the life-nexus (*Lebenszusammenhang*). While the “external world” of the natural sciences is inferred by way of the experimental method, the comprehension of the sciences of the spirit is based on direct facts (“data”) shared by other human beings (“inner world”). This is particularly apparent in biographies, and even more so in autobiographies.
3. The psychology of life. Ebbinghaus describes Dilthey’s descriptive psychology in pejorative terms as merely an “ambiguous and subjective” psychology

of life. Once more, the key concept is *Erlebnis* (lived experience), which for Dilthey represents a structural unit that can be analysed with specific categories such as value, purpose, and meaning, derived from the essential temporality of the concrete existence of the human being, in which each experience follows the last in a continuous temporal flow.^a Value is linked to the present, and purpose to the future, whereas meaning (the main category for Dilthey in his hermeneutic outlook) is derived from memory. Dilthey defines lived experience as the smallest unit of the present that has unitary meaning. Ebbinghaus, in turn, omits the fundamental shift in perspective proposed by Dilthey in differentiating between the “third-person” perspective of the natural-scientific method and the “first-person” perspective characteristic of *Geisteswissenschaften*.^{14,28} In this respect, we should note the legacy of Dilthey in today’s psychiatry, resulting from his known influence on Karl Jaspers’ (1883-1969) *General psychopathology* and the descriptive psychopathology proposed in that work.³¹

Finally, we should note that Dilthey does not challenge the natural sciences nor their methodology, which he studies and celebrates when they are applied in the proper territory, although he radically opposes the use of this methodology as a foundation for the sciences of the spirit. Rather, Dilthey wished for complementarity between these two ways of thinking, which are well differentiated and applicable to different aspects of a single reality.

Henri Bergson

In 1896, the year of the Dilthey-Ebbinghaus polemic, Bergson published one of his fundamental works, *Matter and memory*. Henri Bergson was born in 1859, the year that Darwin published *On the origin of species* (Bergson died in 1941), and worked as a secondary school (*lycée*) philosophy teacher in Angers, Clermont-Ferrand, and Paris, before joining the staff of the *École Normale* in Paris and, later the *Collège de France*, from 1900 to 1921. Through his master Émile Boutroux (1845-1921), Bergson was influenced by the spiritualism of Félix Ra-

vaisson-Mollien (1813-1900), who had studied under Schelling, and was influenced by Darwin’s theory of evolution via Herbert Spencer (1820-1903), whose work he extensively commented and critiqued.^{14,32} Like other philosophers in the *Lebensphilosophie* movement, Bergson had a great impact outside academic circles during his lifetime, and his “Friday lessons” at the *Collège* were very popular, attended by artists, intellectuals, and the general public; noteworthy attendees included the Spaniard Antonio Machado, who received a grant from the Junta de Ampliación de Estudios (1911).^{33(p225)}

Bergson’s philosophy presents great internal coherence, and seeks to overcome the traditional dualisms (consciousness/reality, space/time, idealism/materialism) through an original interpretation of classical concepts including time, life, and memory. His most widely disseminated work, *Creative evolution* (1907), became the manifesto of subsequent thinkers in the *Lebensphilosophie* movement. “Philosophy is the art of forming, inventing, and fabricating concepts,” writes Gilles Deleuze,^{34(p2)} one of the more recent successors of Bergsonism. It is precisely through the concepts that Bergson used, and to an extent modified and invented, that we are best able to summarise his thought.

In his doctoral thesis, entitled “An essay on the immediate data of consciousness” (1889), Bergson proposes the concept of *durée* (duration) alongside those of intensity and liberty, which forms the core of his later thought. In a critique of psychophysics and of the experimental quantification of mental states, Bergson distinguishes between two types of multiplicity: quantitative multiplicity, corresponding to a spatial representation of discontinuous units, and the multiplicity of mental processes, or states of consciousness, which are not quantifiable or are only quantifiable if they are symbolically translated into a space (eg, a series of bell tolls or the individual notes of a melody). Rather than this homogeneous, symbolic space, to which Kant would have reduced time (and it is to this spatialised time that Bergson refers by the stricter term *temps* [time]), by *durée* the French philosopher refers to the lived time of subjective experience, as a heterogeneous succession of states (“the succession of qualitative changes”). This concept of *durée* applies both to humans and to objects external to us; this duration is perceived as *simultaneity*. For Bergson, intelligence (reason) is the human faculty capable of apprehending quantitative, spatial multiplicity, whereas *durée* can only be apprehended by intuition. Thus, human consciousness is

^aJosé Ortega y Gasset,^{30(p256)} in his work *On the concept of sensation*, proposes translating the German term *Erlebnis* for the Spanish *vivencia*: “All that which so immediately reaches the ‘I’ that it becomes a part thereof is a lived experience [*vivencia*].”

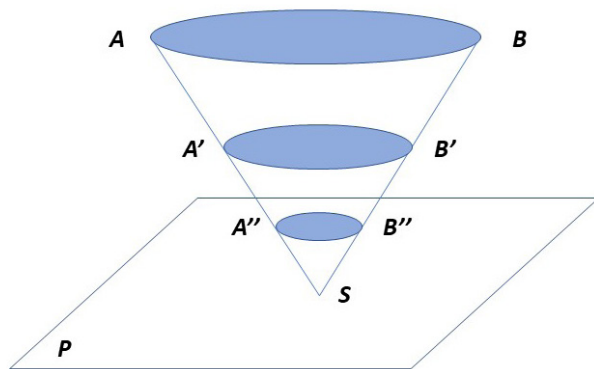


Figure 2. H. Bergson's illustration of memory as a cone. P: portion of the universe included in the subject's perceptual field; S: set of sensorimotor mechanisms acquired by the body; A-B: pure memory; A'-B', A''-B'' (etc): different degrees of tension of memory (contraction of memory).

furnished with a superficial level (the "superficial self"), which thinks spatially, and a deep level (the "deep self"), which can perceive duration. Whereas the superficial self is subject to causal determination, it is in the "deep self" where human freedom truly resides.¹⁴

Bergson mainly develops the concept of *élan vital* (vital impulse or vital impetus) in *Creative evolution*. *Élan vital* is the unique, original, profound, almost conscious force that unfolds ("as if by an invisible wind") in the evolution of life as a whole, in each species and in each individual. *Élan vital* is the original source of the dynamic quality of life. Throughout the course of its unpredictable, open, creative evolution, life encounters "raw materials," which it always surpasses (adaptively) in duration, its internal time of existence and activity, although it always remains bound to the physics and the chemistry of matter. Life "proceeds in insinuating" in matter: "[...] with life there appears free, [unpredictable] movement. The living being chooses or tends to choose. Its role is to create."^{35(p17)}

The classical views of mechanicism and teleology fail to acknowledge the evolutionary process of life, which is neither merely an origin (as proposed by Darwinism) nor a part of a pre-established plan (teleology). The duration of origin differs between life and matter; in its coexistence with matter (characterised by "inertia, geometry, necessity"), life is differentiated into animal and vegetable and, in the latter category, instinct and intelligence.

Vegetables endure because they are able to capture and store solar energy. Animals, in turn, develop a nervous system that delays, or prolongs, the time (*durée*) between external stimulus and the reaction of the organism. This prolongation of life beyond the immediate stimulus constitutes the territory of consciousness and of memory: "[...] such memory, such anticipation, are consciousness itself. This is why, in right if not in fact, consciousness is co-extensive with life."^{35(p17)}

In animals, the culmination of the route of instinct occurs among arthropods, in social hymenoptera, associated with their special neural development (which also attracted the attention of Cajal). On the other hand, the peak of the route of intelligence occurs among the vertebrates, in humans, as a result of the development of the human brain, language, and society. In humans, the *élan vital* gains self-awareness.^{36(p120)}

A theory of life, argues Bergson at the beginning of *Creative evolution*, is inseparable from a theory of knowledge. Instinctual, sympathetic behaviour is related to immediate vital needs. In contrast, intelligent understanding, intellect, aims to dominate matter, but is unable to comprehend life. This is the understanding that characterises science. Only intuitive understanding, intuition, oriented towards inner life, is able to go beyond concepts and words; this intuition is the instrument of philosophy. While the knowledge of particular sciences seeks to dominate nature, philosophical knowledge leads the subject to "sympathise" with it, with the inner world and the inexpressible singularity of the object.¹⁴

Another key concept in Bergson's philosophy, once more related to *durée*, is memory, which is addressed in detail in *Matter and memory*, whose first edition bore the subtitle "Essay on the relation of body and spirit." Bergson reflects on the mind from the complementary viewpoints of psychology (practical action) and metaphysics (intuition, without the mediation of action or interest). The latter approach enables access to *memory as such*; in other words, automatic, permanent synthesis of the past and the changing present and a continuous whole. Thus, Bergson conceives of a pure memory, representing the totality of past experience, which is partly "forgotten" and conserved as a comprehensive whole in a virtual, unconscious state. This memory is partially actualised on different planes of consciousness or mental life: 1) in the form of motor mechanisms, such as habit, as "body memory" (in today's terminology, implicit memory),

or 2) in the form of reminiscence, or representation of some past episode (today, episodic memory). Bergson illustrates the dynamic relationship of pure memory with the present activity with the image of an inverted cone whose apex intersects with a plane (Figure 2). The base of the cone represents the totality of a subject's memory, their pure memory; the apex is the sum of sensorimotor mechanisms acquired by the body; and the plane represents the portion of the universe included in the subject's perceptual field. The intermediate planes dissecting the cone correspond to different degrees of tension of the memory, different tones of mental life. Each of these infinite planes contains, contracted to a greater or lesser extent (contraction of memory), the totality of past experience.³⁷⁻³⁹

Bergson's philosophy of memory involves a rejection of classical associationist theories, based on discrete "atomic" elements of memory. Nothing is stored in the mind or in the brain (contradicting the localisationism of Ribot); rather, the totality of present and past experience form an uninterrupted whole that manifests differently in accordance with practical necessities.³⁷ In reality, different types of memory do not exist; rather, there is a single, dynamic process by which the past is conserved and represented in infinitely varied forms. Memory "is not a thing; it is a process; it is a movement."^{37(p516)}

Conclusions

Any attempt to "simultaneously" address or consider the task of philosophy and that of science, like that proposed here, revolving around life and humans as living beings, must necessarily recur to *Lebensphilosophie*, proposed a hundred years ago, as its immediate antecedent. In its different theoretical forms, *Lebensphilosophie* emerged from the polemic dialogue, the controversies, between experimental biology and psychology and the philosophical traditions of the day. The thought of Dilthey, Bergson, and Scheler, among others, is in a sense situated at the horizon of objective scientific knowledge of the time (which it partly accepts and partly reinterprets and critiques), giving rise to new concepts that sought to apprehend those aspects of life as experience (*bios*) that are not addressed by the life sciences (*zoē*). These aspects include the temporality and the historicity of human life and, consequently, memory in all its forms.

The next article in this series will address how Heidegger radicalised the proximity and the divergence be-

tween science and philosophy with his formula whereby the "scientific man" must focus his research on "beings themselves—and nothing besides." From the first decades of the 20th century, we may consider scientific-philosophical debates, at least in the continental tradition and regarding the subject of memory, to take as a point of reference this (once more, somewhat enigmatic) "nothing besides."^{40(p84)}

Conflicts of interest

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